

REMARKS / ARGUMENTS

The Examiner is thanked for the Office Action of June 8, 2004. This submission is fully responsive thereto.

Restriction Requirement

In the Office Action of June 8, 2004, the Examiner made final a restriction between Group I (claims 1-8, 19-29, and 31-39) directed to an apparatus for placing components on printed circuit boards, Group II (claims 9-18 and 30) directed to a method of mounting electronic components on a printed circuit board, and Group III (claims 40-44) directed to a method of handling electronic components for printed circuit boards. Applicants confirm the provisional election of Group I made in the Amendment of March 23, 2004. Otherwise, Applicants traverse the Restriction Requirement with the reasons detailed in the March 23, 2004 Amendment. In response to the Examiner's requirement to cancel non-elected claims, this Amendment cancels claims 9-18, 30, and 40-44.

Finality of the Office Action

Applicants note that the Examiner made the June 8, 2004 Office Action final. Applicants respectfully assert that this is inconsistent with proper PTO practice. As embodied in MPEP Section 706.07(a), a second Office Action may not be made final when the examiner introduces a new ground of rejection that is neither necessitated by an applicant's amendment nor based on information submitted in an information disclosure statement filed during the period set forth

in 37 CFR § 1.97(c). In the instant application, the Examiner introduces a new ground of rejection under 35 USC § 112, first paragraph for claims 1-8, 19-29, and 31-39. Applicants note that the Office Action of November 20, 2003 did not include this ground of rejection, and Applicants' submission of March 23, 2004 did not include any amendments to the claims. Thus, Applicants respectfully submit that making the Office Action final is premature and request that the finality be withdrawn.

Claim Rejections Under 35 U.S.C. § 112, First Paragraph

In the Office Action, the Examiner rejected claims 1-8, 19-29, and 31-39 under 35 U.S.C. § 112, First Paragraph as not providing examples, a specific meaning or the like of the phrase "without baking" such that an artisan would be able to make or use the invention without undue experimentation. Applicants respectfully traverse the rejection.

In the Office Action, the Examiner asks what tools or devices are used to implement the dry atmosphere "without baking" at -100°C , 0°C , or 200°C . The Examiner also asks for the baking temperature for a component such as a resistor, capacitor, transistor, hybrid circuit, cryogenic sensor chip or stripline at microwave frequencies that enable the invention to work. The Examiner further asks whether the baking temperature is the same for all semiconductor chips.

A patent application is not required to teach what is well known in the art. *In re Bucher*, 929 F.2d 660, 661, 18 USPQ.2d 1331, 1332 (Fed. Cir. 1991); *Hybritech, Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1384, 231 USPQ

81, 94 (Fed. Cir. 1986), cert. denied, 480 U.S. 947 (1987); and *Lindemann Maschinenfabrik GMBH v. American Hoist & Derrick Co.*, 730 F.2d 1452, 1463, 221 USPQ 481, 489 (Fed. Cir. 1984). Applicants respectfully submit that the description in the specification combined with the knowledge of those ordinarily skilled in the relevant art is sufficient to teach one of ordinary skill in the art to make and use the invention including a component storage area maintaining a dry atmosphere "without baking" the components.

At the invitation of the Examiner, applicants herewith submit the Declaration of Frederick Giacobbe further evidencing that those of ordinary skill in the art, at the time the invention was made, knew what was meant by the term "baking", and conversely what was meant by the phrase "without baking". More particularly, Declaration shows that:

- Baking is the process used to dry Moisture/Reflow Sensitive Surface Mount Devices (MSDs) by volatilizing adsorbed and/or absorbed water vapor from these components that is performed either by the original manufacturer of electronic components or by an end user of prefabricated electronic components before placing them onto printed circuit boards and soldering them in place.
- Baking is a heating process performed (usually in air) at some time before these components are actually attached (usually by some type of soldering process) to an electronic circuit board.
- The exact heating process parameters, such as the baking soak temperature and length of the baking time, are usually predetermined by the electronic component package thickness dimensions and a designated moisture sensitivity level that is assigned to a particular type of component based upon its susceptibility to contamination by adsorbed/absorbed

moisture when it is exposed to typical indoor ambient atmosphere conditions.

- Specific moisture sensitivity levels are assigned according to the JEDEC Solid State Technology Association standards plus statistical reliability testing of MSDs by the manufacturer.
- At the time the invention was made, the JEDEC Solid State Technology Association standards included J-STD-020 and/or JESD22-A113.
- At the time the invention was made, exact recommended baking conditions were related to MSD part thicknesses, as well as the specific moisture sensitivity levels, and were listed in Tables 2 and 3 of JEDEC Solid State Technology Association standard IPC/JEDEC J-STD-033.
- These tables provide the baking specifications that one of ordinary skill in the art would understand. However, these tables also cover two separate situations in which baking would have been (or may have been) required. Table 3 covers baking at the original MSD manufacturer's site (or by a supplier or distributor) after particular MSDs are actually fabricated. Table 2 covers baking at an end user's site prior to the attachment of specific MSDs to circuit boards. In both of these cases, the recommended baking procedures apply to MSDs that were exposed to ambient moisture conditions of less than or equal to 60% relative humidity.

Applicants have contemporaneously submitted an Information Disclosure Statement including the following prior art documents evidencing that those of ordinary skill in the art knew at the time the invention was made what was meant by the term "baking", and conversely what was meant by the phrase "without baking":

- A) *JEDEC Standard J-STD-033*, published May, 1999 by the JEDEC Solid State Technology Association;

- B) *Intel Product Change Notice*, published January, 2000 by Intel Corp. (also displayed at <http://developer.intel.com/design/pcn/USB/D0000952.pdf>);
- C) *Guidelines for Handling and Processing Moisture Sensitive Surface Mount Devices (SMDs)*, published October, 2000 by Intersil Corp. (also displayed at <http://www.intersil.com/data/tb/tb363.pdf>); and
- D) *Moisture Sensitive Components*, published October, 2000 by Surface Mount Technology Magazine (also displayed at http://smt.pennnet.com/Articles/Article_Display.cfm?&Section=Articles&SubSection=Display&ARTICLE_ID=84836).

Section 7 of Reference A where Table 3 gives conditions for baking components prior to dry-pack at a supplier or distributor. This information would have been well within the knowledge of one of ordinary skill in the art. As such, one of ordinary skill in the art would have clearly understood what "baking" meant. Conversely, one of ordinary skill in the art would have understood what is meant by "not baking", namely the absence of the actions described by the above baking description.

Applicants kindly direct the Examiner's attention to reference B, in which a example of of a MSD manufacturer's baking directions correlates with the low and high baking temperatures of 40° and 125° of MSDs corresponding to the baking conditions found in Table 2 of reference A.

The portion of reference C under the heading, "*Re-Baking of Moisture Sensitive Product*", shows another example of a MSD manufacturer's baking

directions correlates with the low and high baking temperatures of 40° and 125° of MSDs corresponding to the baking conditions found in Table 2 of reference A.

Reference D is an article from *Surface Mount Technology* describing in detail what is meant by baking, in correspondence with the description of baking in reference A.

Applicants assert that the Declaration and references submitted herewith persuasively show that one of ordinary skill in the art at the time the invention was made would have understood what is meant by the phrase, "baking", and consequently what is "without baking", i.e., the absence of actions constituting baking.

Claim Rejections Under 35 U.S.C. § 103(a)

In the Office Action, the Examiner rejected claims 1, 2-5, 19-20, and 31-33 as obvious over U.S. Patent 6,054,682 (hereinafter the '682 patent). Applicants respectfully traverse this rejection for one or more of the following reasons. First, the '682 patent fails to disclose each and every one of the claimed limitations, including: a) component storage area maintaining a dry atmosphere without baking the components, and b) a dry gas delivery system for delivery of a dry gas to a dry atmosphere component storage area. Further to this first argument, the Examiner has not provided any other teaching that supplies any missing limitations. Second, the Examiner has not provided any motivation to modify the teachings of the '682 patent to result in the claimed invention other than to say that the hypothetical modification proposed by him was known to those skilled in

the art. Third, Applicants further respectfully traverse this rejection for the reasons enumerated in the Request for Continued Examination of May 28, 2003 and the Amendment of March 23, 2004.

With regard to Applicants' first argument, they believe that an explanation of the differences between the prior art, including the '682 patent and the present invention would be informative.

Conventional methods of mounting components to printed circuit boards, call for baking the components, i.e., holding the components in an oven while maintaining a specific temperature for a specific amount of time. Similar to the conventional methods, the '682 patent calls for baking the components at 95°C for two hours, at 50-99°C for 2-4 hours, or at higher temperatures (col. 4, Ins. 23-42 and col. 6, Ins. 30-43). The '682 patent explicitly discloses "baking", and underscores the importance of maintaining the dryness of products that are baked.

On the other hand, Applicants' invention removes the need to bake components before mounting them to printed circuit boards by utilizing a dry atmosphere component storage area in which a dry gas delivery system delivers a dry gas to the storage area thereby maintaining a dry gas environment. Indeed, Applicants claimed invention includes a component storage area which maintains a dry atmosphere *without baking*. Thus, there is no need to provide an oven, no need to bake the components for a specific temperature, and no need to maintain the baking conditions for a specific period of time. This increases

adaptability and productivity since the components may be stored for a relatively short period of time before being mounted or stored for an indefinite period of time when the components are later called for, all the while avoiding the infiltration of moisture. While the dry gas may be at various temperatures, the conditions under which the dry gas is delivered to dry atmosphere component storage area is not "baking" because no specific baking temperature nor specific baking time are required.

Further to Applicants' first argument, it is Applicants' understanding that the Examiner considers the combination of the thermal chamber (ref. char. 111) and inert gas supply (not shown) of the '682 patent to be equivalent to the dry gas delivery system of the claimed invention. If this understanding is incorrect, Applicants respectfully request the Examiner to correct any misunderstanding. Applicants kindly point out that this interpretation is improper because it renders the thermal chamber both a dry gas delivery system *and* a component storage area at the same time. In the Examiner's interpretation, such a hypothetical "dry gas delivery system" does not deliver a dry gas to a component storage area (which in this case the Examiner apparently considers it to be the thermal chamber), because the thermal chamber is already an essential part of such a hypothetical "dry gas delivery system". Rather, such a hypothetical "dry gas delivery system" would only deliver a dry gas to an outlet or exhaust of the thermal chamber.

Applicants attach hereto the Declaration of Frederick Giacobbe providing persuasive evidence on this point. As shown by the Declaration, one of ordinary

skill in the art would likely consider a dry gas delivery system for delivery of dry gas to a dry atmosphere component storage area necessarily requires that the gas must first be dry *before* it is delivered into the storage area. Furthermore, the Declaration persuasively shows that one of ordinary skill in the art would likely consider the '682 patent to disclose drying of the gas only while it is in the chamber.

In response to Applicants' arguments and in order to advance prosecution, Applicants respectfully request the Examiner to specifically identify where the '682 patent discloses both a dry gas delivery system and a component storage area. More specifically, Applicants kindly ask the Examiner to specifically identify where the '682 patent discloses delivery of a *dry* gas to a component storage area. Otherwise, Applicants respectfully request that the Examiner withdraw the rejections because of the demonstrated lack of disclosure of: a) component storage area maintaining a dry atmosphere without baking the components, and b) a dry gas delivery system for delivery of a dry gas to a dry atmosphere component storage area.

In light of the above evidence and arguments, Applicants assert that the '682 patent fails to disclose all of the limitations of the claim, and on that basis request that the rejection be withdrawn.

With regard to Applicants' second argument, the Examiner has failed to provide a motivation for one of ordinary skill in the art to modify the disclosure of the '682 patent in the manner suggested by him, other than to say that it was

known in the art to heat a component storage room from 50°C. It is well settled that a statement, that the claimed invention was known in the art because the references relied upon teach all all the aspects of the claimed invention, is not sufficient to provide a *prima facie* case of obviousness without some objective reason to combine the teachings of the references. *In re Gordon*, 733 F.2d 900, 902 (Fed. Cir. 1984); *In re Kotzab*, 217 F.3d 1365, 1370 (Fed. Cir. 2000). Thus, Applicants assert that the Examiner fails to provide any motivation to hypothetically modify the '682 in the manner suggested by him, and on that basis request that the rejection be withdrawn.

With regard to Applicants' third argument, they respectfully traverse the rejection for the reasons enumerated in the Request for Continued Examination of May 28, 2003 and the Amendment of March 23, 2004, and on that basis request that the rejection be withdrawn.

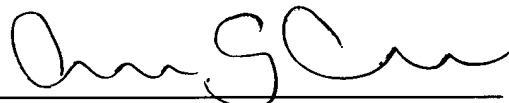
In the Office Action, the Examiner also rejected claims 6-8, 21-29, and 34-36, and 37-39 as obvious over the '682 patent in view of U.S. Patent No. 5,365,779 (hereinafter the '779 patent) for various reasons. Since this rejection of these claims depends upon the Examiner's arguments in the above rejection, Applicants respectfully traverse this rejection for the reasons enumerated above, and for the reasons in the Request for Continued Examination of May 28, 2003 and the Amendment of March 23, 2004.

CONCLUSION

For the reasons explained above, Applicants respectfully request that a timely Notice of Allowance be issued in this case.

Should the Examiner believe that a telephone call would expedite prosecution of the application, he is invited to call the undersigned attorney at the number listed below. Requests to debit deposit account number 01-1375 are made in an Information Disclosure Statement and Petition for Extension of Time which are contemporaneously submitted with this paper. Otherwise, it is believed that no other fee is due at this time. If that belief is incorrect, please debit deposit account number 01-1375. Also, the Commissioner is authorized to credit any overpayment to deposit account number 01-1375.

Respectfully submitted,



Christopher J. Cronin
Registration No. 46,513

Date: October 8, 2004

Air Liquide
5230 S. East Ave.
Countryside, IL 60525
(708) 579-7925 Phone – (708) 579-7801 Fax

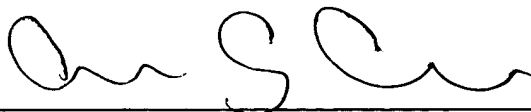
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I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to:

Commission for Patents

Application No. 09/698,817
Amendment dated October 8, 2004
Reply to Office Action of June 8, 2004

PO Box 1450
Alexandria, VA 22313-1450
On this 8th day of August, 2004.

A handwritten signature in black ink, appearing to read 'Cronin', written over a horizontal line.

Christopher J. Cronin
Registration Number 46,513